

Name: **Solution Key**

1) Write the domain of each graph in both **inequality** and **interval** notation.

Graph 1



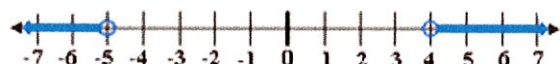
Inequality:

$$x \leq -5 \text{ or } x \geq 5$$

Interval:

$$(-\infty, -5] \cup [5, \infty)$$

Graph 2



Inequality:

$$x < -5 \text{ or } x > 4$$

Interval:

$$(-\infty, -5) \cup (4, \infty)$$

Graph 3



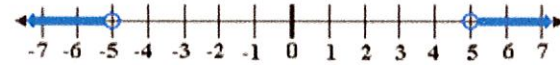
Inequality:

$$-5 < x < 5$$

Interval:

$$(-5, 5)$$

Graph 4



Inequality:

$$x < -5 \text{ or } x > 5$$

Interval:

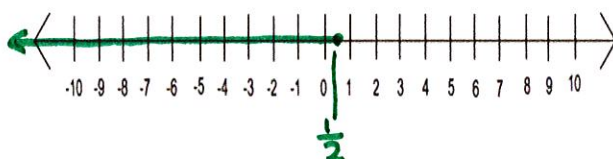
$$(-\infty, -5) \cup (5, \infty)$$

2) Graph each interval on a number line.

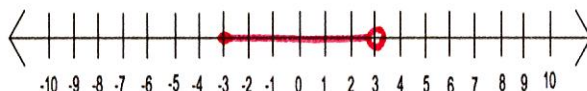
a. $(3, \infty)$



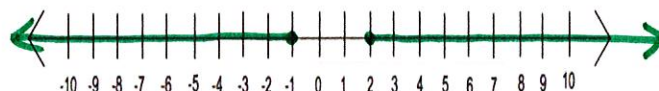
b. $(-\infty, \frac{1}{2}]$



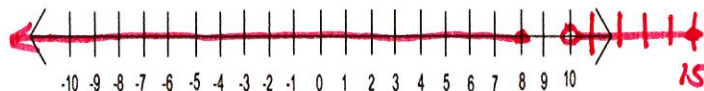
c. $[-3, 3)$

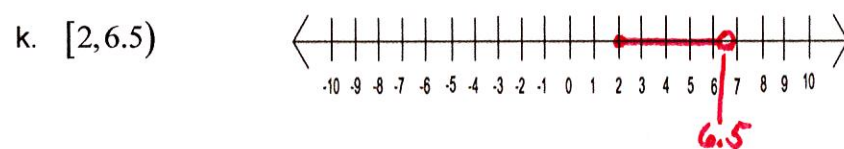
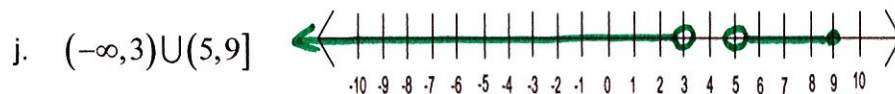
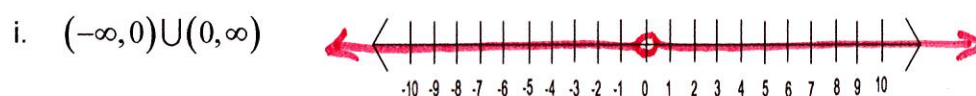
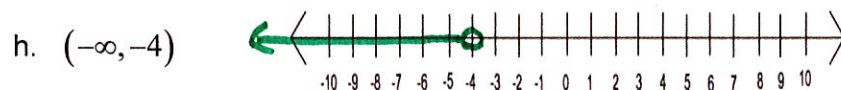
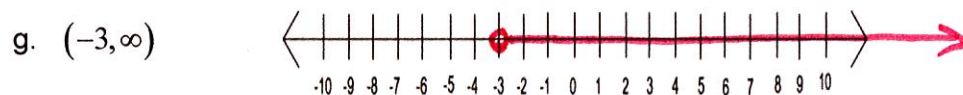
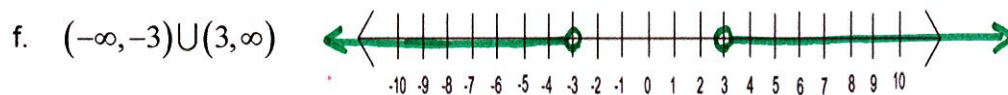


d. $(-\infty, -1] \cup [2, \infty)$



e. $(-\infty, 8] \cup (10, 15]$





3) Write each inequality in interval notation. Making a number line graph will help.

a. $x > 7$
 $(7, \infty)$

b. $x < 7$
 $(-\infty, 7)$

c. $x \leq 7$
 $(-\infty, 7]$

d. $-6 < x < 9$
 $(-6, 9)$

e. $-3 < x < 5$ or $x > 7$
 $(-3, 5) \cup (7, \infty)$

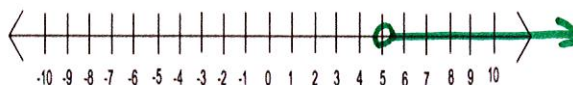
f. $x < 0$ or $x > 5$
 $(-\infty, 0) \cup (5, \infty)$

4) Solve each inequality. Graph the solution set on a number line, AND write the solution in interval notation.

a. $4x + 5 > 25$

$$4x > 20$$

$$x > 5$$



b. $5 - \frac{1}{3}n \leq 6$

$$-\frac{1}{3}n \leq 1$$

$$n \geq -3$$



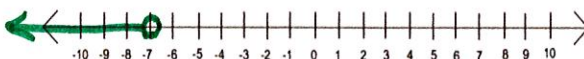
c. $5 - 5a > 4(3 - a)$

$$5 - 5a > 12 - 4a$$

$$5 > 12 + a$$

$$-7 > a$$

$$a < -7$$



d. $-3 < 2x + 5 < 8$

$$-8 < 2x < 3$$

$$-4 < x < 1.5$$

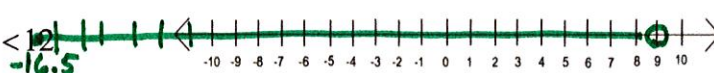


e. $-5 \leq \frac{2}{3}p + 6 < 12$

$$-11 \leq \frac{2}{3}p < 6$$

$$-\frac{33}{2} \leq p < 9$$

$$-16\frac{1}{2} \leq p < 9$$



f. $3x + 10 > 5$ or $3x + 10 < -5$

$$3x > -5 \text{ or } 3x < -15$$

$$x > -1\frac{2}{3} \text{ or } x < -5$$



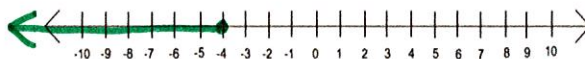
g. $12 - 5x \geq 32$

$$12 \geq 5x + 32$$

$$-20 \geq 5x$$

$$-4 \geq x$$

$$x \leq -4$$



i. $-2(3x + 1) < 4x - 3$

$$-6x - 2 < 4x - 3$$

$$-2 < 10x - 3$$

$$1 < 10x$$

$$\frac{1}{10} < x$$

$$x > \frac{1}{10}$$

